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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/897,169

07/02/2001

Yoshiyuki Nakane

SUNSTAF-1001

2908

7590

02/02/2004

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EXAMINER

TYLER, CHERYL JACKSON

ART UNIT

PAPER NUMBER

3746

DATE MAILED: 02/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/897,169

Applicant(s)

NAKANE ET AL.

Examiner

Cheryl J. Tyler

Art Unit

3746

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 July 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 July 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 8 . 6) ☐ Other: _____

DETAILED ACTION

Priority

1. Acknowledgment is made of applicant's claim for foreign priority based on an application filed in Japan on 7/4/2000. It is noted, however, that applicant has not filed a certified copy of the Japanese application as required by 35 U.S.C. 119(b).

Drawings

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "wobble plate" must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

3. The abstract of the disclosure is objected to because the recitation of "muffle" (line 3) is presumed to be --muffler--. Correction is required. See MPEP§608.01(b).

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the

art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 9-10 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. As claimed, there is only first muffler chamber recited in independent claim 1. However, claim 9 from which claim 1 depends, claims "a plurality of the first muffler chambers is formed" (claim 9, lines 1-2). It is not clear from the specification, nor the drawings, as to what constitutes the plurality of first muffler chambers. Since the claims are too ambiguous in scope, no prior art could reasonably be applied to the claim. However, this is not to be a presumed indication of allowable subject matter.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed

before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

7. Claims 1-5, 8, 11-12, and 14 are rejected under 35 U.S.C. 102(e) as being anticipated by Nakamura et al. (6,077,049). Nakamura et al. teach cylinder blocks 21, 22 having a plurality of cylinder bores 27A, 27B and a discharge muffler 49 (corresponding to the claimed first muffler chamber) being formed within the cylinder block in a space between the cylinder bores; housings 24, 25 (corresponding to the claimed chamber housing) being secured to one end of the cylinder block and having at least a pair of suction chambers 33, 34 and a discharge chamber 35, 36 located near each of the cylinder bores; a drive shaft 38 rotatably supported in the cylinder block; pistons 28 disposed in each of the cylinder bores; and a swash plate 40 being fixedly and inclinably disposed on the drive shaft. Nakamura et al. further teach that the discharge chambers communicated with each other via discharge passages 45a, 46a, and that the drive shaft 38 "is operably coupled to and rotated by an external drive source such as a vehicle engine by way of a clutch (not shown)" (column 3, lines 50-52). As illustrated in Figure 1, the piston 28 only compresses a gas at only one end of the cylinder bore. Nakamura et al. teach that their invention may be embodied as a wobble plate, that is, a "double-headed piston type compressor including a wave cam plate having a wavy cam surface instead of a swash plate" (column 10, lines 19-21).

With respect to claim 11, a recitation with respect to the material intended to be worked upon by a claimed apparatus does not impose any structural limitations upon the claimed apparatus which differentiates it from a prior art apparatus satisfying the structural limitations of the claims, as is the case here.

8. Claims 1-4, 6-8, 11, 15-17, and 21 are rejected under 35 U.S.C. 102(b) as being anticipated by Miller (4,768,928). Miller teaches a compressor having a cylinder block 15, 16; a plurality of cylinder bores 24; a first gas pulse attenuation chamber 40 (corresponding to the claimed first muffler chamber) being formed within the cylinder block in a space between the cylinder bores; front and rear heads 12, 19 (corresponding to the claimed chamber housing) being secured to a respective end of the cylinder block; suction chambers 27, 28; discharge chambers 32, 33, located near each of the cylinder bores; drive shaft 22 rotatably supported in the cylinder block; double-ended pistons 23 disposed in each of the cylinder bores; a fixedly, inclinably placed swash plate 21; and a second gas pulse attenuation chamber 44 (corresponding to the claimed second muffler chamber) that is contiguous with the first gas pulse attenuation chamber 40. According to Miller, high pressure gas delivered to the front discharge cavity 32 "is directed through a port 38 ... to a first gas pulse attenuation chamber 40 from which it then passes through an elongated gas pulse attenuation passage 42 to a second gas attenuation chamber 44" (column 3, lines 18-23). Figure 1 illustrates that the double-ended piston compresses the gas at both ends of the cylinder bore.

With respect to claim 11, a recitation with respect to the material intended to be worked upon by a claimed apparatus does not impose any structural limitations upon the claimed apparatus which differentiates it from a prior art apparatus satisfying the structural limitations of the claims, as is the case here.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. Claim 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miller (mentioned previously) in view of Bethke (5,253,576). Miller teaches most of the limitations of the claims. However, he does not explicitly teach to what rotates the drive shaft. Bethke teaches that "the end of the drive shaft ... is typically provided with a pulley, coupling, or direct drive for receiving a drive belt or drive shaft from a suitable source of motive power, such as an electric motor" (column 2, lines 49-53). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to rotate the drive shaft with either a clutch mechanism or a drive motor because they were art-recognized equivalents in those rotary drive applications where it is immaterial what the source of motive power is.

11. Claims 18-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miller (mentioned previously). Miller teaches most of the limitations of the claims, except he does not explicitly teach a multiplicity of first and second gas attenuation chambers. However, one of ordinary skill in the art would have known to include

additional gas attenuation chambers in order to further reduce the noise generated by the axial piston swash plate compressor. As illustrated in Figure 4, the use of a device within the gas attenuation chamber reduces the pressure pulsations (and hence, the generated noise), and thus, additional devices in additional gas attenuation chamber would have reduced the pressure pulsations even further. Therefore, it would have been obvious to one of ordinary skill in the art to use a multiplicity of first and second gas attenuation chambers in order to reduce the pressure pulsations in the axial piston compressor.

12. Claims 12 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miller in view of Shintoku et al. (6,296,457). Miller teaches most of the limitations of the claims. However, he does not explicitly teach the functional equivalence of single headed and double headed pistons - that is, a piston that compresses gas at only one end of the cylinder bore rather than at both ends of the cylinder bore. Shintoku et al. teach that single headed pistons may be substituted for double headed pistons (see column 9, lines 5-11) in those applications where high capacity compressed fluid is not essential. Therefore, it would have been obvious to one of ordinary skill in the art to use a single-headed piston, as taught by Shintoku et al., in the Miller invention when it is necessary to reduce the capacity of compressed fluid being discharged from the compressor.

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.


- Brucken et al. (4,347,046) teach a swash plate compressor having front and rear gas attenuation (muffler) chambers.
- Ota et al. (6,508,634) teach utilizing the space between cylinder bores for positioning suction and discharge mufflers.

Contact Information

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cheryl J. Tyler whose telephone number is 703-306-2772. The examiner can normally be reached on Monday-Thursday, 6:00 - 10:30 am.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Justine R. Yu can be reached on 703-308-2675. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9302.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0861.


Cheryl J. Tyler
Primary Examiner
Art Unit 3746

CJT
January 27, 2004